DOCUMENT RESUME

ED 221 903 CS 503 980

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TITLE To Use A Personalized System of Instruction in the Basic Speech Communication Course or Not to Use a Personalized System of Instruction? It's a Question That We Must Examine and Answer if the Basic Speech Course Is Going to Survive the Economics of the 80's.
PUB DATE Nov 82
NOTE 26p.; Paper presented at the Annual Meeting of the Speech Communication Association (68th, Louisville, KY, November 4-7, 1982).

EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS Course Content; Higher Education; *Individualized Instruction; *Instructional Improvement; *Mastery Learning; *Nontraditional Education; Pacing; Small Group Instruction; *Speech Communication; *Speech Instruction; Teaching Assistants; Teaching Methods
IDENTIFIERS *Personalized System of Instruction

ABSTRACT

The Personalized System of Instruction (PSI), a system that combines the strengths of basic learning, individual instruction, and personalized relationships, all at low cost, is an attractive alternative for the basic speech communication course. It involves mastery learning, self-pacing, stress on the written word, instructor assistants, and the use of lectures to motivate rather than to supply essential information. A PSI course covering the same content as a traditional basic course would divide the course into eight units of instruction: (1) Nature of Human Communication, (2) Public Speaking: Developing the Public Presentation, (3) Public Speaking: Informative and Persuasive Presentations, (4) Analyzing and Receiving Communication, (5) Nature of Language and Its Social Influence, (6) Nonverbal Communication, (7) Relational Communication, and (8) Small Group Communication. In a time of rising enrollments and shrinking resources, PSI is less expensive than traditional methods, more attractive to students, a learning experience for instructor assistants, and helpful to departments seeking lower costs, more majors, and staff flexibility. Only the self-pacing feature and the difficulty of planning small group or experiential learning are potential limitations. (JL)

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TO USE A PERSONALIZED SYSTEM OF INSTRUCTION IN THE BASIC SPEECH COMMUNICATION COURSE OR NOT TO USE A PERSONALIZED SYSTEM OF INSTRUCTION? IT'S A QUESTION THAT WE MUST EXAMINE AND ANSWER IF THE BASIC SPEECH COURSE IS GOING TO SURVIVE THE ECONOMICS OF THE 80's.

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The Personalized System of Instruction (PSI), often referred to as the Keller Plan after its founder Fred Keller, was developed to teach introductory psychology courses. Since it was first used, however, PSI has seen widespread use in many disciplines. Sherman estimates that six thousand PSI courses have been taught at all levels of education by virtually all disciplines.[1] Boylan reports that over thirteen hundred individuals presently use the PSI method on the university and college level; that 80.5% of the individuals surveyed represent four-year institutions with the remainder representing two-year instituions; that 66% of the colleges and universities are public institutions; and that major users of the PSI method are in astronomy, biology, chemistry, computer science, engineering, English composition, mathematics, physics, psychology, sociology, and statistics with less use in such areas as English literature, French, geography, home economics, music, philosophy, physical education, political science, reading, and Spanish.[2] As can be noted, PSI has not been used in speech communication to the same extent that it has in other disciplines.

At the present, however, most educational institutions are facing declining enrollments, inflation, and "lids," all of which are triggering lower financial support; in addition, a new type of student who is older and more diverse is seeking an education. As a result of these developments, institutions must operate under limited budgets, which impair the educational quality or limit the appeal of learning for students; or must turn to new or innovative instructional practices and methods that utilize economical, individualized, and nontraditional approaches. PSI, it is felt, fulfills these requirements

by combining the strengths of basic learning, individual instruction, and personalized relationships, all at low cost. This paper, therefore, discusses what PSI is, how it can be used in the basic speech communication course, why it is an attractive alternative method of instruction, and what its limitations are as an alternative method of instruction.

What is PSI?

In the early 1960s, individualized instruction resurfaced at all levels of education: the Montessori preschools, founded in the early part of this century, reappeared after a long absence; Glaser's Individually Prescribed Instruction and Flanagan's Project Plan provided educational methods on the high school level; Postlethwaite developed the Audio-Tutorial Methods; and Bloom wrote on Mastery Learning for the college level.

To make learning more efficient and reinforcing at the higher educational level, Fred Keller and others developed PSI, the most influential of all the methods for individualized instruction. This method, first used by Keller, Bori, and Azzi and brought to the attention of American education by Keller,[3] has since been researched extensively.[4] PSI, according to Sherman, is usually associated with five defining characteristics: (1) mastery learning, (2) self-pacing, (3) a stress on the written word, (4) instructor assistants, and (5) the use of lectures to motivate rather than to supply essential information.[5]

The mastery feature requires that students obtain perfection in some aspects of the instruction. Keller and his associates believed that accomplishments could be detected through performance. Thus, students in the PSI method are called upon to respond frequently and with responses that have consequence. The theoretical base of PSI suggests that if activities are to produce positive consequences for the learner, repeated testing must take place

with errors resulting in a program of remediation rather than in penalties;[6] it is important that success be rewarded. Thus, grades must reflect accomplishment, not the number of mistakes made along the way; and grading must be determined on absolute rather than on normative standards which are competitive or comparative.

The mastery requirement (whether in part or in full) leads to the second feature, self-pacing. Given that at least some aspect of the PSI method requires mastery, it must allow, nevertheless, for a go-at-your-own pace. Mastery cannot always be commanded on schedule, but because individual differences must be taken into account, some self-pacing is mandatory, i.e., it must be completed within the time limits of the course--a semester, quarter, or whatever.

The last three features follow directly from the first two. Because some self-pacing is required, a lock-step approach of disseminating information is impossible. Written materials, therefore, become the major informational source; they may be supplemented by other materials such as audiovisuals, video tapes, CAI, and other innovations to aid student learning. The heavy reliance on the written word requires that the materials be written clearly with objectives specified, sequenced in small steps, and, when possible, arranged from the simple to the complex.

Because the PSI method allows students to use repetitive testing, to work at different speeds, and to involve themselves in a wide range of materials at any point, there must be a means to supplement and amplify the instructor. This leads to the fourth feature--the use of instructor assistants or, as they are known in some PSI courses, proctors or tutors. The instructor assistants (IAs) are usually undergraduate students who have previously taken the course.

The use of lectures, the fifth feature, differs from that of the traditional classroom. Lecturing, not a major teacher commitment in the PSI method, is used to supplement and to motivate. Thus, the teacher becomes a creator of classroom materials and a manager of a learning system.

PSI has many variations. Boylan found that approximately 95% of the PSI courses used mastery learning and self-pacing, that 88% stressed the written word, and that 78% used IAs.[7] Of those responding to Boylan's survey, only 51% used lectures for the purpose of motivating students. According to existing research,[8] most courses which use the PSI method meet with little or no failure as long as they contain the basic-learning theory and individualized instruction with a highly personalized relationship among students as well as between students and instructors.[9] While emphasizing five basic features, the PSI method is by no means inflexible to the needs of the users in widely differing environments.

Using PSI in the Basic Speech Communication Course

Any method of instruction assumes that the objectives of the course and of the instructor can be met. To illustrate how the PSI method might be used in the basic speech communication course, it is necessary to describe the typical basic course. Gibson, Gruner, Hanna, Smythe, and Hayes provide the following general framework for the typical course:[10]

1. The enrollment in the basic speech course generally is growing at a faster rate than the enrollment of the institution.
2. There has been a trend toward more performance, a trend relevant only to those courses which emphasize public speaking orientation.
3. The public speaking orientation and the hybrid orientation (combination of public speaking, interpersonal, and group) are divided about equally among

the basic speech course programs.

4. The majority of the instruction is done in small, intact lab environments rather than in large lectures.
5. Behavioral objectives are widely used and behavioral outcomes are measured by a large percentage of those who state their objectives in behavioral terms.
6. Approximately half of the instruction is by instructors and assistant professors. The other half is divided among graduate assistants, associate professors, and full professors.

The basic speech communication course at the University of Nebraska, Lincoln, reflects the general framework found in the Gibson et al. survey. The approach is best described by what is referred to as a hybrid course, i.e., recognizing the importance of public speaking by devoting about 50% of the course to it while dividing the other 50% between interpersonal and small group communication.

The following describes how the PSI course, which covers essentially the same content as most traditional basic courses, is applied by dividing the course into eight units of instruction:

1. Nature of Human Communication
2. Public Speaking: Developing the Public Presentation
3. Public Speaking: Informative and Persuasive Presentations
4. Analyzing and Receiving Communication
5. Nature of Language and its Social Influence
6. Nonverbal Communication
7. Relational Communication
8. Small Group Communication

Each unit is self-contained with learning objectives, reading materials, exercises, and self-testing questions so that students can determine when they

are prepared to take unit quizzes. The major source of information is written materials; however, some units are supplemented with live lectures, video-taped lectures, or taped demonstrations, some of which are attended outside of class on a voluntary basis. To complete a unit of instruction, students must show mastery of the content by taking unit quizzes, which must be retaken until 100% accuracy is achieved.[11] Students take review tests, which are not part of the mastery component, after the first three units, the second three units, and the last two units. After students have completed the third review test, they may take the final exam, which along with the review tests is used in determining the final course grade. The tests and the final exam are based on norms.[12] The unit quizzes, review tests, and final exams, each of which is made up of a set of randomly selected items so that no two are exactly the same, are computerized.[13]

Students in the PSI course present three speeches, each of which may be given a second time.[14] The speeches, which are evaluated using a competency-based rating instrument, help to determine a student's final course grade. The self-pacing feature of PSI allows students to work as fast as they wish, but not as slow as they wish: they must complete the course within the fifteen-week semester. Each unit has recommended deadlines, which help to provide structure for students.

A student is required to attend classes only for orientation--the first four days of the semester, when the course and its policies are explained and when students meet with their IAs; for each of the one-hour lectures which precede the three speech assignments; and for presenting his or her own speech. Students who are not presenting speeches are free to attend other speech presentations, take quizzes, work on speeches, and so forth. This provides students

with flexibility in their use of time.

Undergraduates, selected from the top students who have taken the course, are used as IAs to correct quizzes, review tests, and give final exams; to rate speeches; to tutor students; and to record grades. It is imperative that IAs be chosen on the basis of academic competency, understanding of the course procedures, and personality. The maximum ratio of students to IAs is ten to one. This ratio is based upon previous PSI course research showing that the maximum number of students an IA can work with effectively is ten. Graduate students in the PSI method become supervisory instructors (SIs). (Supervisors can be instructors rather than GTAs.) The SIs train the IAs, observe and assist them in the classroom, assist in developing course materials and in determining or revising course policies, present workshops and lectures, and help students with learning problems.

PSI as an Attractive Alternative for the Basic Speech Communication Course

Heun, Heun, and Ratcliff feel that institutions are slowly realizing that instructional methods must be changed to facilitate a new and diverse clientele and to cope with the implications of financial stress.[15] The increase in enrollments in the 1960s brought reduced faculty/student ratios, and because most faculty/student interactions are inversely related to class size, retention of a conventional instructional format during a time of rising enrollments resulted in the following consequences:[16]

1. loss of the personal-social aspect of the education process
2. decreased speed and quantity of feedback to students
3. decreased frequency and quantity of feedback to instructors
4. increased reliance on the group lecture for presentation of critical information despite increased evidence of its ineffectiveness

5. the movement toward the relative evaluation of students, thus making learning competitive

The difficulties produced by increased enrollments can be severe, but the composition of many university student populations presents an even greater difficulty. Open admissions and liberal financial-aid policies have altered the range of differences among students' interests, learning skills, and prior experience with content in a given discipline. The traditional method, designed to educate the masses by meeting the needs of a typical learner, is generally averse to heterogeneous students for the following reasons:

> Material is presented in units which are too large for some students, resulting in failure, and too small for other students, resulting in boredom; students are forced to move through a course at the same time, teacher-specified pace; examinations are given for the teacher's purposes of grading rather than for the purpose of determining the student's progress; students are treated as collective bodies rather than as unique persons; and the locus of control, relative to the length of focus on the instructional session, resides in the teacher's hands while the student passively sits until the lecturer is finished or else stays away entirely. Under this type of system, the student is motivated primarily by the fear of receiving a poor grade, of losing a course credit, or being forced to leave the college for academic failure.[17]

Decreasing enrollments during the 1970s and early 1980s might be considered by some to be the savior of education and to provide for an increase in faculty/student ratios as staff levels generally remained constant. However, not all schools have experienced enrollment decreases, e.g., the

University of Nebraska, Lincoln has experienced record enrollments each of the past three years. Regardless of enrollment increases or decreases, most institutions are caught in a vicious inflationary price/wage spiral that is choking education. Thus, even if enrollments are increasing, chances are that the financial support has not been able to meet demands. Morse and Wilson report that a major eastern university, whose enrollment is remaining constant, increased its undergraduate tuition and still had to consider dismissing twenty-one of its faculty, some of whom were tenured.[18]

Wiethoff indicates that the trend is "buying more while spending less in performance courses." He further says that "the widely hearalded retrenchment in higher education poses special problems for performance-oriented basic speech courses. The pressures of retrenchment, based on declining revenue from shrinking enrollments, call for related responses from educators--specifically, the accommodation of as many students as is economically desireable with as little commitment of resources as is instructionally desireable."[19]

Gibson et al. surveyed 552 colleges and universities ranging in enrollment from less than one thousand to over twenty thousand and found that eighteen major problems existed for those who are responsible for the basic speech communication course:[20]

1. class size
2. consistency of course content across sections
3. acquiring qualified staff for the basic course
4. time to cover course objectives
5. equitable evaluation of student performance
6. negative student attitudes toward required courses
7. lack of equipment and facilities

8. determining course content and philosophy
9. developing and maintaining performance standards
10. heterogeneous grouping in regard to speech ability and background
11. training of graduate teaching assistants in instruction/evaluation procedures
12. faculty attitudes toward the course
13. monitoring graduate teaching assistants' performances
14. administration attitudes toward the course
15. reconciling theory versus practice in the classroom
16. diversity of student interests.
17. budgetary limitations
18. challenging students to achieve their highest performance levels

While no method will solve every problem, the PSI method addresses many and helps to solve some. Heun, Heun, and Ratcliff cite six specific advantages for using individualized instruction in speech communication courses:[21]

1. to maximize learning
2. to maximize affect
3. to develop self-directed learning
4. to utilize the strengths of the faculty
5. to adapt to varying needs
6. to provide accountable learning for less cost

In summation of their article, they state that "after using individualized instruction for the last five years, it is our experience that these advantages can be accomplished in the basic speech communication course."

PSI is specifically attractive in regard to (1) cost, (2) students, (3) instructor assistants, and (4) department.

1. Cost Attractiveness

To illustrate why PSI is an attractive alternative it is necessary to compare it to other methods of instruction. Brooks and Leth provide data on speech communication which compare instructional costs per student hour of credit (see Table 1).[22] These data show quite clearly that the most expensive instruction is the traditional method with a full professor and that the least expensive is self-instruction with a GTA. However, data from University of Nebraska, Lincoln courses show that the PSI method with a GTA is considerably less expensive than any of the methods provided in these findings; the reason is that PSI allows for larger enrollments.

Insert Table 1 about here

When comparing the PSI method to the traditional method, the savings in basic speech communication course are as dramatic (see Tables 2 and 3 for a comparison, assuming equivalent enrollments). Heun, Heun, and Ratcliff state: "It is reasonable that individualized instruction would be less expensive in that it can accountably teach more students with the same number of teachers."[23] Because the PSI method permits fewer faculty to teach more students, the financial attractiveness of using it, therefore, is clear.

Insert Tables 2 and 3 about here

2. Student Attractiveness

(a) high satisfaction. A review of PSI research by Kulik, Kulik, and Cohen shows that "students rate PSI classes as more enjoyable, more demanding, and higher in overall quality and contribution to learning than in conventional classes."[24] Heun, Heun, and Ratcliff further add to the support of individualized instruction as being more satisfying in their statement that "interaction with an instructor is positive, for now a teacher is perceived as

being primarily a facilitator, not primarily an evaluator. This leads to affect gains for both the teachers and students."[25] While no specific experimental research has been done in our own program, over four hundred student evaluations of the basic speech communication course using PSI show that 80% of the students' comments suggest high satisfaction with PSI compared to other courses. While the evidence is not conclusive, it does suggest that students are generally satisfied with the PSI method.

(b) better achievement. Kulik, Kulik, and Cohen report that students enrolled in PSI courses averaged about 8% higher on the same examinations when compared to students in conventional classes. Their review also shows that students in PSI classes retained up to 14% more than students in conventional classes taking the same course.[26] Although we have no conclusive data which compares PSI to our conventional instruction, most (70%) PSI students' comments are positive and suggest that they do learn in this course, e.g., "It was a course where you had to learn," "I feel I have learned a lot from the course and also improved in giving speeches." Despite some negative comments, "I didn't learn a thing; there was too much reading in this course," "This course didn't help me; the traditional sections I've heard are much easier," the far greater number of positive comments suggest that students enjoy and profit from the PSI course.

(c) interaction. The PSI method provides for more opportunities of interaction and thus appears to personalize class instruction. Heun, Heun, and Ratcliff state: "Individualized instruction is, by definition and long experience of the authors, a more personalized learning system. Each learner is recognized as a unique person."[27] In addition to the ratio of students to IAs which allows for more personal interaction, our IAs are trained to interact

with the students, to be supportive, to provide help, and to encourage their students to do well in the course.

(d) immediate feedback. The PSI method is designed to provide students with constant and immediate feedback after each event in the course and generally within the same class period. The IAs are trained to provide their students with sufficient feedback on quizzes, review tests, the final exam, and speeches to help the students learn the material. If IAs are unable to help with a difficult learning situation or to provide the appropriate feedback, they refer students to the SI for specialized help.

(e) clear learning tasks. Students in the PSI course receive definite instructions covering what they need to learn, where they will find the necessary information, and what they have learned once they have completed the unit.

(f) better utilization of time. Students who learn quickly do not have to wait for slower learners. Slow learners are not intimidated by having to learn faster than they are able. However, slow learners must complete the course during the scheduled fifteen-week semester. No incompletes are given except for acceptable reasons, e.g., illness. Students can move at their own rate and use the time more efficiently by determining their own study patterns: "Because a student both understands how he or she learns best, and develops new learning skills, individualized instruction promotes independent learning."[28] Because PSI allows students to use their own learning styles and to learn at their own rates, it is possible to complete the course ahead of schedule; then they may devote time to other courses. Finally, because attendance is not required everyday, students may pick and choose those days when they are ready to demonstrate what they have learned; a fixed schedule does not permit such flexibility.

3. Instructor Assistants' Attractiveness

(a) IAs learn the course materials better. The IAs are exposed to the contents of the course a second time, and learning thereby is reinforced, especially when they explain concepts and terms to their students, grade and evaluate students, and review study-guide materials with them; while no research evidence exists from our course to support this contention specifically, sufficient testimony from IAs suggests that they believe they learn the materials much better.

(b) IAs gain experience in working with others. The most rewarding aspect of being an IA is the experience gained from working with other students; an IA learns how it feels to be on the teaching side of the learning experience. For those students who are planning a teaching career, the experience is also attractive because it projects a sense of what teaching is like.

(c) IAs receive university credit. IAs receive three hours of credit for participating in the internship course. The credit hours are attractive because they can count toward certain requirements of the various colleges within the university; in addition, three hours can be applied to a minor or major in speech communication.[29]

(d) IAs find the experience satisfying. The IAs' evaluations suggest that they are very satisfied with their experiences. This is evident because about 30% of the IAs request to be an IA a second time. In addition, IAs' comments about their experiences are extremely positive.

4. Department Attractiveness

(a) low cost. The PSI method provides an education comparable to the traditional method but, as shown in Table 1, at a much lower cost per student.

(b) flexibility of staff. Because PSI requires fewer full-time staff

members to operate, as illustrated in Table 2, a department's teaching staff can teach more middle-and upper-division courses and handle larger enrollments, if necessary.

(c) more majors. Since the PSI approach was introduced in our basic course, we have seen a marked increase in the number of students who minor or major in speech communication. Before PSI was initiated, we had approximately twenty-five majors in the Arts and Science College. We now have over seventy. While all of our new majors cannot be attributed to PSI, most can. In addition, our middle- and upper-level course enrollments have shown dramatic increases. Furthermore, we have found that new courses which formerly took several years to gain enrollment now do so during their first offering.

(d) credit hours for the department. Besides the number of new majors, the PSI method as we use it generates approximately 240 credit hours per semester through the internship course.

PSI Limitations

The philosophical differences between the PSI method and the traditional are marked. PSI with its self-pacing feature supports the teaching function; because both time and learning cannot be constant, methods should vary to suit the individual. Traditional instruction with its lock-step approach supports the selection function with a structured time frame; because individuals differ, learning varies. According to Semb, the two philosophies are at different ends of a continuum with hundreds of compromises in between: "Most individuals who use self-paced learning systems believe that it is more important to teach than it is to select."[30] However, the self-pacing of PSI can be a limitation for some students, although the pacing is usually constrained by the

amount of time in a quarter or semester.

A second limitation of PSI involves the planning of small group or experiential learning with groups of students. Such gatherings are difficult if not impossible to plan: any task or event which requires a number of students to participate calls for scheduling and thus places a constraint on self-pacing. Another limitation concerns the size of audiences for speech presentations. Because of the number of students in the PSI sections, the self-pace feature of the course, and the time required to assure each student an opportunity to speak, audiences must be small. Only five students are scheduled to present speeches per speech day per IA. Finally, because students deal on a direct day-to-day basis with IAs, the amount of interaction between students and a full-time faculty member is limited.

Summary

This paper explains the developmental background of PSI and its five defining features; how the Department of Speech Communication at University of Nebraska, Lincoln utilizes the PSI approach in the basic course through eight units of instruction; PSI as an alternative course affecting cost, students, instructor assistants, and department; and the limitations of PSI. The attempt has been to show that for teaching the basic course PSI is an attractive method overall not only for students but also for the department and its staff.

TABLE 1

COMPARATIVE INSTRUCTIONAL COSTS PER STUDENT HOUR OF CREDIT

Instructional Method	Number of Students	Student Credit Hours	Cost	Cost per Student Credit Hour
Traditional				
Full Professor (6 hour load)	50	150	$5,580	$37.20
Assoc. Professor (6 hour load)	50	150	$4,490	$29.93
Asst. Professor (6 hour load)	50	150	$3,590	$23.80
GTA (6 hour load)	50	150	$1,700	$11.33
Nontraditional				
CMI or CAI	50	150	Computer: $3,000 GTA: $1,700	$31.33
Mass Lecture with a GTA	50	150	Asst. Prof.: $600 GTA: $1,700	$15.33
Self-Instruction with a GTA	50	150	Modules: None GTA: $1,133	$ 7.55
*PSI with a GTA	50	150	GTA: $ 425	$ 2.83

* Data from Department of Speech Communication at

TABLE 2

COMPARISON OF TRADITIONAL VS. PSI

Method	Number of Sections	Number of Students per Section	Total Number of Students	Number of Instructors per 6 hr. load	per 9 hr. load
Traditional	33	24	792	17	11
PSI	8	100	800	4	3

TABLE 3

FINANCIAL COMPARISON

Method	Instructor Load	Number of Instructors	Salary	Total Cost
Traditional	6 hr.	17	$5,000	$85,000
PSI	6 hr.	4	$5,000	$20,000
Traditional	9 hr.	11	$5,000	$55,000
PSI	9 hr.	3	$5,000	$15,000

ENDNOTES

[1] J. Gilmour Sherman, Personalized System of Instruction: Forty-One Germinal Papers (Menlo Park, Calif.: W. A. Benjamin, 1974).

[2] Hunter R. Boylan, "PSI: A Survey of Users and Their Implementation Practices," Journal of Personalized Instruction, 4 (Spring 1980), 40-43.

[3] Fred S. Keller, Carolina Martuscelli Bori, and Rodolpho Azzi, "Um Curso de Psilogia," Ciencia e Cultura, 16 (1964), 307-309; and Fred S. Keller, "Good-bye, Teacher . . . " Journal of Applied Behavior Analysis, 1 (1968), 78-89.

[4] See B. A. Ryan, Keller's Personalized System of Instruction: An Appraisal (Washington, D. C.: American Psychological Assn., 1974); James H. Block and Robert B. Burns, "Mastery Learning," Review of Research in Education, III, ed. L. S. Shulman (Itasca, Ill.: Peacock, 1976); Dan E. Hursh, "Personalized Systems of Instruction: What Do the Data Indicate?" Journal of Personalized Instruction, 1 (1976), 91-105; James A. Kulik, Chen-Lin C. Kulik, and Beverly B. Smith, "Research on Personalized System of Instruction," Journal of Programmed Learning and Educational Technology, 13 (1976), 23-30; A. R. Robin, "Behavioral Instruction in the College Classroom," Review of Educational Research, 46 (1976), 313-354; T. C. Taveggia, "Personalized Instruction: A Summary of Comparative Research, 1967-1974," American Journal of Physics, 44 (1976), 1028-1033; Kent R. Johnson and Robert S. Ruskin, Behavioral Instruction: An Evaluative Review (Washington, D. C.: American Psychological Assn., 1977); and James A. Kulik, Chen-Lin C. Kulik, and Peter A. Cohen, "A Meta-Analysis of Outcome Studies of Keller's Personalized System of Instruction," American Psychologist, 34 (1979), 307-318.

[5] J. Gilmour Sherman, "Logistics," The Keller Plan Handbook, ed. Fred A. Keller and J. Gilmour Sherman (Menlo Park, Calif.: W. A. Benjamin, 1974).

[6] For further explanation of the theoretical basic goals of PSI, see Michael D. Scott and Thomas J. Young, "Personalizing Communication Instruction," Communication Education, 25 (1976), 211-221.

[7] Boylan.

[8] Ryan; Block and Burns; Hursh; Kulik, Kulik, and Smith; Robin; Taveggia; Johnson and Ruskin; and Kulik, Kulik, and Cohen.

[9] Scott and Young.

[10] James W. Gibson, Charles R. Gruner, Michael S. Hanna, Mary-Jeanette Smythe, and Michael T. Hayes, "The Basic Course in Speech at U. S. Colleges and Universities: III," Communication Education, 29 (1980), 1-9.

[11] Quizzes consist of 10 to 12 multiple-choice questions and 2 to 3 short-answer questions with the total number of points equaling 16. A student must have all answers correct for the unit to be considered mastered. If a student scores between 13 and 15 points, he or she restudies the incorrect items and rewrites the answers until all 16 points are received. If a student scores 12 or less, he or she must retake the quiz at a later time. The retaken quiz covers the same unit of instruction, but the items are different.

[12] Review tests and the final exam can be taken twice without penalty; the higher score of each is used in determining the final course grade. Once students take the final exam, they cannot go back to retake any other aspects of the course.

[13] The computer generates the items which are to appear, the answer key with the correct answers, the author of the selected reading materials, and the page numbers for the correct answers; it also lists the unit and learning objective from which each item was taken.

[14] Speeches are rated as exceptional, acceptable, or unacceptable by using a competency-based evaluation form. Students receiving an unacceptable rating must present the speech a second time to receive an acceptable. If they do not receive an acceptable, no points are given toward their final grade. If they receive an acceptable rating, they may give the speech a second time so as to receive an exceptional rating. A rating of exceptional is worth 10 points; an acceptable, 5 points; and an unacceptable, 0 points. If a student does not present the speech, he or she has 10 points deducted from the final grade.

[15] Linda R. Heun, Richard E. Heun, and Linnea L. Ratcliff, "Individualizing Speech Communication Instruction," Communication Education, 25, (1976), 185-190.

[16] David G. Born, Instructor Manual for Development of a Personalized Instruction Course, 2 vols. (Salt Lake City: Center to Improve Learning and Instruction, University of Utah, 1971).

[17] T. F. Nelson, "Teaching and Learning at Kalamazoo College, 1970," Paper presented at the Conference on the Keller Plan, Mass. Inst. of Tech., Boston, Oct. 1971, p. 27.

[18] Ben W. Morse and Wendy Wilson, "Retrenchment Economy in the Basic Course: An Overview of Problems and Prospects for the 1980s," Paper presented at the Midwestern Basic Course Directors' Conference, Indiana Univ., Bloomington, 1980.

[19] William J. Wiethoff, "Buying More While Spending Less in Performance

Courses," Paper presented at the Midwestern Basic Course Directors' Conference, Indiana Univ., Bloomington, 1980, p. 1.

[20] Gibson et al., 8.

[21] Heun, Heun, and Ratcliff, 189.

[22] The data in Table 1 arebased on the same salaries and costs used by Brooks and Leth in their 1976 study. Thus inflation and salary increases over the past five years have not been included. See William D. Brooks and Pamela J. Leth, "Reducing Instructional Costs: A Survey of the Basic Course in Communication and an Experimental Test of a Proposed Instructional Model," Communication Education, 25 (1976), 191-202.

[23] Heun, Heun, and Ratcliff, 189.

[24] Kulik, Kulik, and Cohen, 317.

[25] Heun, Heun, and Ratcliff, 188.

[26] Kulik, Kulik, and Cohen, 307-318.

[27] Heun, Heun, and Ratcliff, 188.

[28] Ibid.

[29] To receive 3 credits, students enroll in our Internship in Classroom Communication course during which they attend training sessions; receive instructions on tutoring, grading, and evaluating speeches; and write a paper about their experiences or do a research paper related to PSI. How well they perform their IA responsibilities determines their grade in the course.

[30] George Semb, "Evaluation of Self-Paced Learning Courses," Innovation and

Productivity in Higher Education (Pittsburgh: Carnegie Mellon Univ. Press, 1977), 113.